

## PATENT SPECIFICATION

526,773



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## COMPLETE SPECIFICATION

## Improvements in or relating to Velocipedes

I, ANDRE JULES MARCELIN, a French citizen, of 174, Rue de l'Universite, Paris (Seine), France, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to velocipedes in general, e.g. to bicycles, tandem bicycles, motor bicycles, tricycles and so on.

It is an object of the invention to provide a velocipede which is capable of being garaged, transported, or stored in a small space, and it is a further object of the invention to provide a construction of velocipede which does not involve complete redesigning of the machine or the use of a large number of special joints and which yet attains in a simple and effective manner, the desired end of the velocipede being disposable into a small space.

According to the invention there is provided a velocipede in which are provided wheels and a frame of smaller diameter and height respectively than is normal for the height of the person for which the machine is designed, an exceptionally long vertical or substantially vertical pillar for the or each saddle of the velocipede, the or each pillar being telescopically supported in a tubular vertical or substantially vertical guide tube, and handlebars which are foldable or collapsible from a raised to a lowered position, characterized in that the said frame is of a rigid construction and has its upper rear part no higher or not substantially higher than the tops of the wheels of the velocipede, the saddle pillar or the rear saddle pillar is disposed only slightly in front of the rear wheel or wheels, and the or each guide tube for a saddle pillar traverses the complete vertical dimension of the said frame and is fixed at or near its upper and lower ends respectively to upper and lower parts of such frame.

It will be clear that the said guide tube is so arranged and secured to the said frame as to increase the strength of the latter.

[Price 1/-]

Preferably the or each saddle would be arranged so that it may be retracted, when the velocipede is not in use, to a position in which it is only about half the normal height above the ground, i.e. the height of the saddle above the ground when the machine is in use, which will generally be about 90 cms. in the case of an adult.

Moreover it will be appreciated that the overall dimensions of the machine can, when not required for use, be further restricted by moving the handlebars, e.g. by pivoting, into a position in which they fall within the vertical dimension of the frame. To this end, means e.g. inter-engaging pin and slot or toothed means, may be provided for locking the handlebars in the raised and working position.

The fork of the front wheel of the machine may be adapted for pivoting through 180° so as to bring the front wheel close to the chain wheel and thus further reduce the overall dimensions of the machine.

The accompanying drawings illustrate embodiments of the invention which, it is to be understood, is not limited to the embodiments illustrated. In these drawings:

Figure 1 is a side elevation of a bicycle constructed in accordance with the invention.

Figure 2 illustrates in plan a detail of the bicycle shown in Figure 1.

Figure 3 is a view corresponding to that of Figure 1 but illustrating parts of the machine in retracted positions.

Figures 4 and 5 are respectively side elevations of a tandem bicycle and of a motor cycle constructed in accordance with the invention.

Figures 6 and 7 are respectively a partial rear elevation and partial plan of the parts of a pair of handlebars for a vehicle according to the present invention.

Figure 8 is a view corresponding to that of Figure 7 but illustrating a modification of one of the parts of the vehicle.

Figure 9 is a similar view illustrating another modification.

The frame C of the bicycle illustrated

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in Figures 1 to 3 is so constructed and arranged as to provide a sufficiently rigid connection between the two wheels, and to enable the pedals and chain wheel to be mounted at a suitable height above the ground, regard being had to the relatively small diameter which the wheels have.

Thus, the frame C is made up of tubes 1, 2 and 3 arranged in triangular fashion and in a similar way to ordinary bicycles but with the difference that the triangle is somewhat flattened. The triangular frame carries at its front part the headstock 4 of the front fork 5 which carries the front wheel 6, and the crank gear 7 is arranged at the apex of the bottom, obtuse angle of the triangular frame at a convenient height above the ground. Two stirrup-shaped members 8 and 9 are arranged at the rear of the frame and are adapted to support the rear wheel 10.

Assuming for instance, that the wheels of a bicycle constructed in accordance with Figures 1 to 3 and intended for use by adults have a rim diameter of between 30 and 50 cm. and advantageously 40 cm., the stirrup member 8 has an inclination rising in the direction of the crank gear 7 such that the latter has the desired height in relation to the ground and the rear wheel which, if desired, may have a diameter different from that of the front wheel.

The tube 1, it will be noted, is similarly inclined, thus reducing the overall height at the rear of the vehicle, and the lower and rear end of this tube is substantially on a level with the top of the rear wheel, this disposition of the parts being of advantage in the mounting of the saddle as will be hereinafter explained.

The saddle S of the bicycle is constructed in conventional fashion but the means for supporting this saddle, and the means provided in accordance with the invention for enabling it to be retracted are arranged in a substantially vertical plane located a short distance in front of the back wheel.

To this end the saddle has a vertical pillar which can be telescoped into a suitable part of the frame, this arrangement having the double advantage that the weight of the cyclist is transmitted to the frame under optimum conditions, since this weight acts in the direction of length of the system and thus submits it to flexing loads, and that the saddle pillar can be retracted to a position in which the space occupied by the bicycle is very small. In addition the suspension is improved in that the weight of the cyclist is displaced forwardly.

In the drawings the saddle S is provided

with a pillar 11 rigidly secured thereto and adapted to slide in a guide tube 12 rigid with the frame and connecting the tube 1 with the fork 8. The guide tube 12 is connected at its upper part to the parts 1, 2 and 9 at their point of intersection, which is vertically above a point just in front of the rear wheel 10, and at its lower part to the stirrup or fork 8 by means of a connector 13 (see Figure 2).

The assembly is completed by suitable locking means 14 for fixing the pillar 11 of saddle S in an adjustable position.

It will be seen that the guide tube traverses the frame over its complete vertical dimension and thus contributes to the general strength and rigidity thereof.

Furthermore, not only does the guide tube 12 contribute to the strength of the frame, but it provides for a very compact arrangement of the bicycle. Thus, if  $h'$  is the height of the upper edge of the tube 12 above the ground and is of the order of  $H/2$ , where  $H$  is the height of the saddle above the ground when the machine is in use, the lower end of the pillar 11 will not project beyond the place PQ tangential to the wheel bases, or at least not to any substantial extent, when the saddle is dropped an amount  $h'^2$ .

The handlebars comprise two arms 15 which are so connected to the front stem or headstock 4 as to be capable of pivoting around axes transverse to this stem. Thus, the ends 16 of these arms may be inserted in sleeves 17 rigid with this stem.

From Figure 3 it will be observed that when it is desired to confine the machine in a restricted space, the arms 15 may be moved into position in which they are located laterally of the front wheel 6. This operation is preferably effected after the front wheel has been brought nearer the pedal gear 7 by rotating this wheel about the axis 4 through  $180^\circ$ .

Suitable means are of course provided for locking the arms 15 in their upper position, and these means advantageously comprise a pin 18 (see Figure 7) or a tooth 18' (see Figure 8) on each of the arms 15 and adapted to enter a corresponding notch 19 in each of the sleeves 17. Figure 9 illustrates a modification in which the locking is effected by a plurality of interengaging teeth and notches generally designated 19'.

The actual locking is effected by a screw threading on the inner ends 16 of the arm 15 and wing nuts 21 which bear against the sleeves 17. This construction is very simple and yet very effective in preventing undesirable movement of the handlebars when the bicycle is being used.

Springs 22 may also be provided for

urging the ends 16 of the handlebars from the sleeves 17 when the nuts 21 are loosened, and under these circumstances the arms may be pivoted for reducing the overall dimensions of the bicycle.

Locking means similar to or different from those described above may be used for fixing the handlebars in the retracted position.

10 A frame 23 may be provided to function normally as a luggage carrier but to be capable of acting as a stand when the machine is not in use, being adjustable for this purpose.

15 Figure 4 illustrates the invention applied to a tandem bicycle, in which case each of the saddle pillars 11 is mounted in the manner described above in a suitably lowered frame which, in this instance, comprises two triangular systems.

Figure 5 illustrates a motor cycle or autocycle equipped in accordance with the invention, the chain 24 and the pedal gear 7 being retained for starting purposes. In this case, a motor 25 is fixed directly to the hub of the rear wheel, and the fuel tank is denoted 26, the gear box 27, and the exhaust pipe 28.

30 Like reference numerals are used in Figures 4 and 5 for the parts corresponding to the parts bearing these references in Figures 1 to 4.

It will also be understood that the invention is applicable to vehicles with more than two wheels.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A velocipede in which are provided wheels and a frame of smaller diameter and height respectively than is normal for the height of the person for which the machine is designed, an exceptionally long vertical or substantially vertical pillar for the or each saddle of the velocipede, the or each pillar being telescopically supported in a tubular vertical or substantially vertical guide tube, and handlebars which are foldable or collapsible from a raised to a lowered position, characterized in that the said frame is of a rigid construction and has its upper rear part no higher or not substantially higher than the tops of the wheels of the velocipede, the saddle pillar or the rear saddle pillar is disposed only slightly in front of the rear wheel or wheels, and the or each guide tube for a saddle pillar traverses the complete vertical dimension of the said frame and is fixed at or near its upper and lower ends respectively to upper and lower parts of

such frame.

2. A velocipede according to claim 1, wherein the height of the completely retracted saddle or saddles is approximately one-half of the height of the saddle or saddles in use.

3. A velocipede according to claim 1 or 2, wherein the arms of the handlebars are capable of pivoting and means are provided for locking these arms in the position of use.

4. A velocipede according to claim 3, wherein the locking means are of the intermeshing type.

5. A velocipede according to any of the preceding claims, wherein the frame comprises three tubes arranged in the form of an inverted triangle and carrying at the front a pivot for the front wheel fork, such triangle having an obtuse lower angle which carries at its apex the crank gear and having at the rear two supports in the form of stirrups for the rear or second wheel.

6. A velocipede according to claim 5, wherein the wheels have a rim diameter of between 30 and 50 cm. and wherein one of said stirrups is inclined to the horizontal and has its highest end remote from the rear wheel, the top bar of the frame being arranged parallel or substantially parallel to this stirrup.

7. A velocipede according to claim 5 or 6, wherein the lower end of the top bar is at the same height or approximately the same height as the upper level of the rear wheel.

8. A velocipede according to claim 1, and claim 5, 6 or 7, wherein the said guide tube rigidly connects the top bar of the frame to the lower of the two stirrups.

9. A velocipede according to claim 8, wherein the guide tube is connected to the said top bar at a part where this top bar is united to the upper of the two stirrups and to the rear downwardly-inclined limb of the triangular frame.

10. A velocipede according to claim 3 or 4, wherein the means for locking the arms of the handlebars comprise pin and slot means or a plurality of teeth engaging corresponding recesses.

11. A velocipede according to claims 3, 4 or 10, wherein the locking means include screw and nut means and spring means adapted to decouple the locking means when the connection between the screw and nut means is loosened.

12. A velocipede according to any of the preceding claims, including a luggage carrier adapted to act as a stand.

13. A tandem bicycle constructed in accordance with any of the preceding claims, and including a double triangular

frame, each triangle of which has the features set forth in claim 5, 6, 7 or 8.

14. A bicycle substantially as herein described with reference to Figures 1 to 3, and Figures 6 and 7, 8 or 9, of the accompanying drawings.

15. A tandem bicycle substantially as herein described and illustrated in Figure 4 of the accompanying drawings.

10 16. A motor cycle substantially as herein described and illustrated in Figure 5 of the accompanying drawings.

Dated this 31st day of March, 1939.

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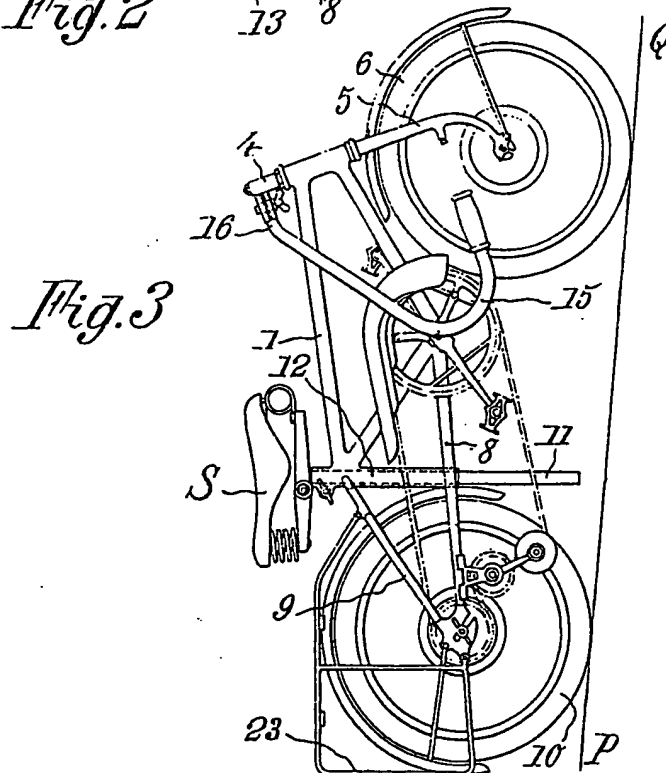
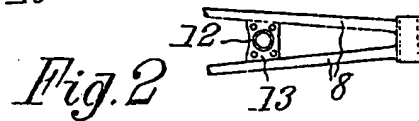
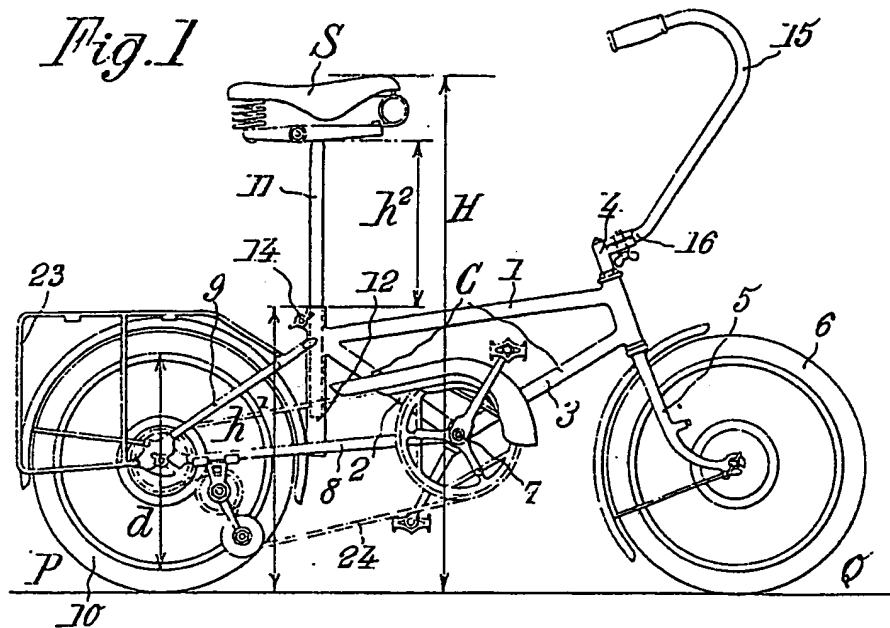
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Fig. 4

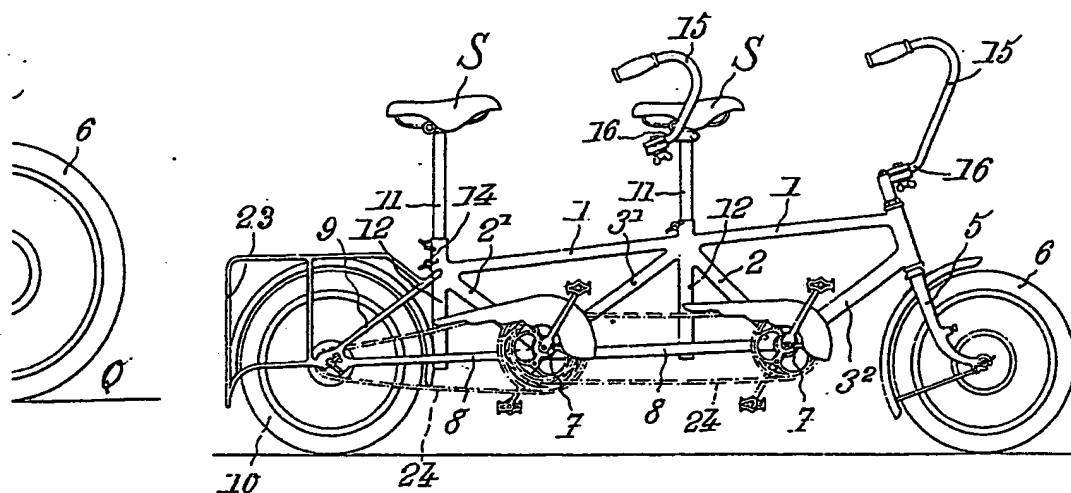
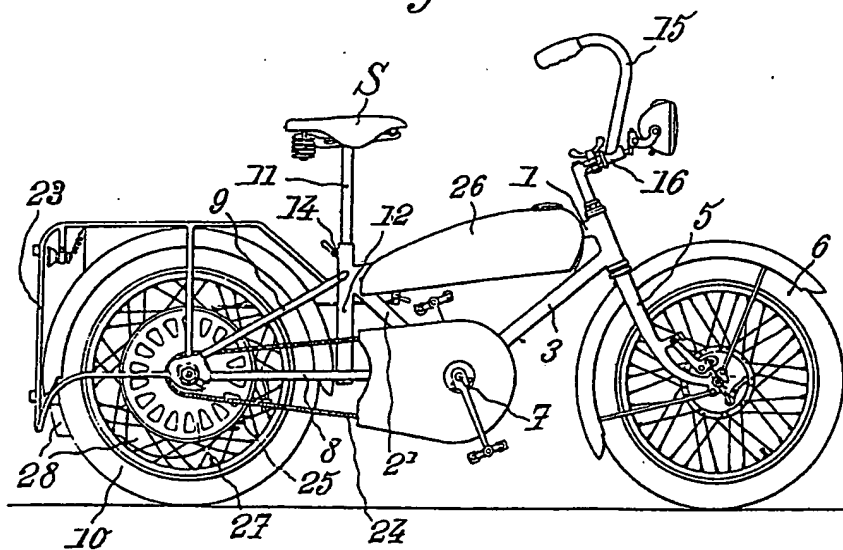
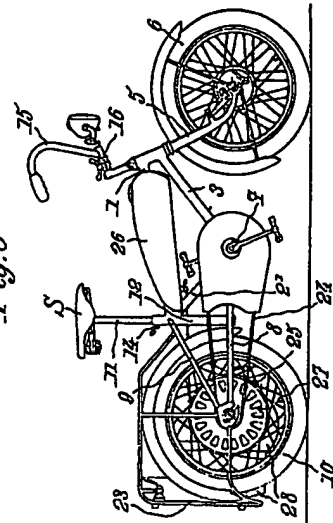
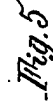
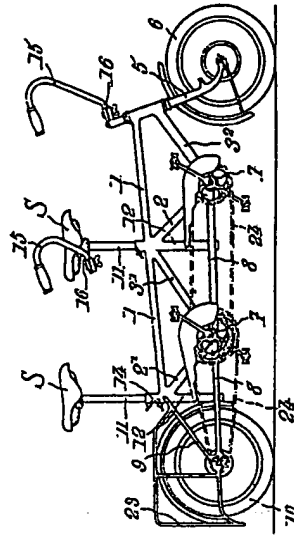
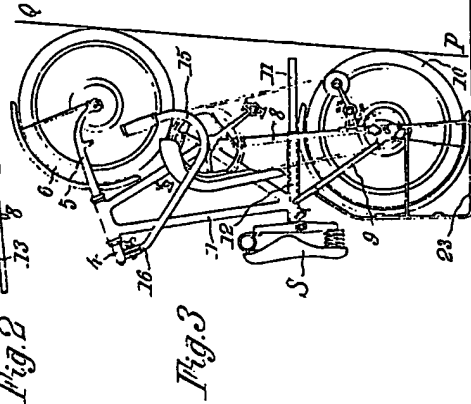
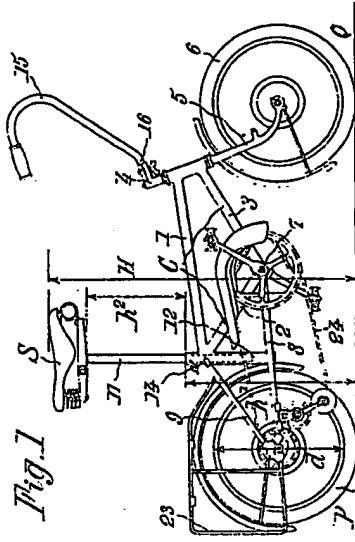


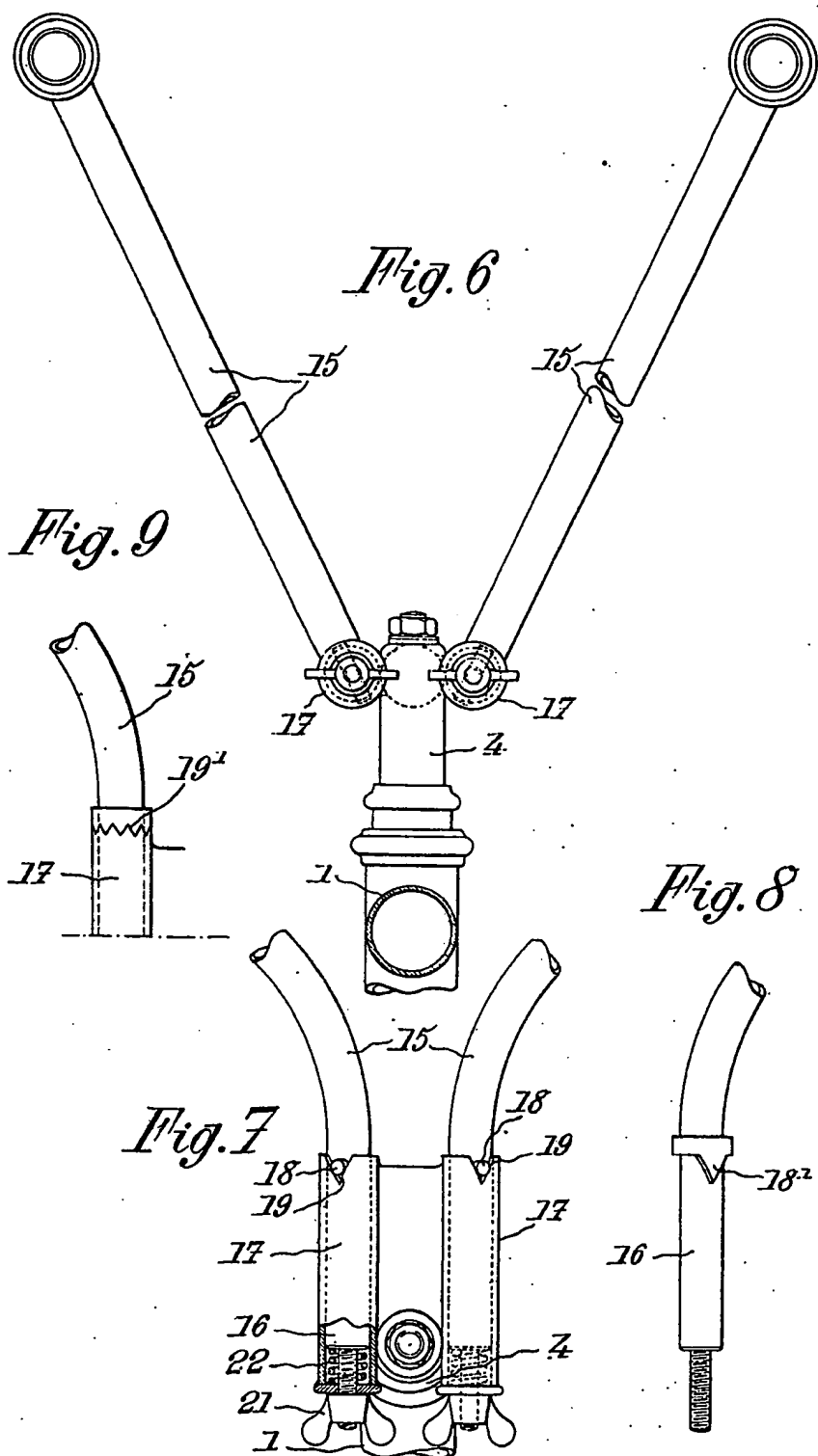
Fig. 5





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